

# THE JUVENILE INSTRUCTOR.

HOLINESS TO THE LORD.



VOL. 10.

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NO. 6.

## A DRINKING FOUNTAIN.

WE give herewith an engraving of a drinking fountain. We imagine that some of our little readers will ask, when they see it. "What is a drinking fountain?"

The water which is brought into old cities for the use of the people, comes by means of pipes which are buried in the ground. These pipes bring the water into the yards and houses of the citizens, and they pay taxes for the water. In many cities, where there is a large population, it is very difficult to get a drink of water. It is true that a thirsty person might knock at the door of some house and beg a drink; but not many would like to do so, and it is seldom done. There are drinking saloons where beer, ale and drinks of various kinds are sold, and many of the people, and especially the working classes, go to them to quench their thirst. The result is, in many instances, men acquire the habit of drinking strong drinks and become drunkards. The increase of drunkenness in cities has caused many kind, benevolent and good people to mourn. They saw the misery which this dreadful habit of drinking beer and ale and other drinks produced, and they desired to have those who indulged in this habit forsake it. They showed them how wicked it was, how much injury it did, how poor and miserable it kept them, for many would spend all their earnings for drink and their families would be hungry and destitute of clothing and other comforts. But they saw that to keep men away from drinking saloons, they must furnish them other means of quenching their thirst. If a

man fond of liquor was thirsty, he would be strongly tempted on passing a drinking saloon, to go in and buy something to drink. Then these benevolent people who were desirous to put a stop to drunkenness, thought of drinking fountains. These fountains were put up in the hot, dusty cities, on the

sides of the streets. the water pipes were led into them so as to furnish a steady stream—pure, free, life-giving. Men, women and children, dogs, horses and cattle by going to these fountains can have a cool draught of water to slake their thirst. If you have ever been far from water and thirsty, you know how great a blessing is a drink of cool, pure water. In cities many a poor horse has died for the want of it; many a poor dog has run mad for want of it; and many a poor working man has gone to the beer and liquor saloons, because it was easier to buy beer and liquor than to get a drink of water.

After all, there is no beverage so suitable for man or beast as water. There is nothing to equal it in quenching the thirst. God has furnished it in abundance, and it is so necessary to our comfort, that we ought not to stint it to ourselves or our

animals. In our land water is a vital necessity. We cannot make a settlement without its aid. And how many pure, crystal, mountain streams we have pouring their life-giving presence into our valleys, supplying our orchards, fields and gardens with necessary nourishment; No need for drinking fountains in our cities or settlements. The clear little rivulets



which flow down the sides of our streets are convenient for man's use and to quench the thirst of animals. But yet there are men who make fools of themselves by drinking intoxicating drinks! Some boys, too, we hear, are so destitute of sense as to drink liquor. What will they become if they continue this habit? Poor, miserable, degraded creatures, whom people will pity and despise, whose society will be shunned, and who, if they do not repent of and forsake their evil habit, will fill drunkards' graves. This is a terrible penalty to pay for drinking, and yet it is that which many have paid, and others who take the same course will have to pay. JUVENILES, take our advice, stick to water as a beverage, never be tempted to taste strong drinks.

## NOVEL READING.

BY ROLLO.

THE amount of novel reading indulged in by the young people of both sexes is really alarming, and the sale of sensational story papers far exceeds that of any of the better kinds of periodicals. On a Saturday evening a person may notice crowds of men and women, boys and girls, standing around in front of the book stores waiting for the books to arrive; and they stay there till the mail does arrive, even if they have to wait an hour or two. And when they get their papers they cannot wait until they get home, but must open and read them by the light of the shop windows. Now, to a person who does not read them, this mania seems absurd, because there are no practical suggestions that might be turned to any use in them; there is nothing in fact, but love and Indian stories, and the poorest kind at that. But if they start on a story they must finish it, if they wade through two feet of snow to get the papers containing the continuation. It is amusing to hear some young people talk about novels, and come to the conclusion that one was better than the other, "because it was more exciting."

It is a remarkable fact that there is scarcely a novel written but there is a beautiful woman in it, with "cheeks like roses (painted of course), teeth like pearls," etc., and where they get all the beautiful women from passes my comprehension. If it is not a love story, it is a recital of some poor, ragged urchin, whom some kind, old benevolent gentleman picks up out of the gutter. The urchin is usually smart, and he makes such rapid strides that in a year or two he is a millionaire. Or if he does not rise himself, the novel writers generally make him have a duke for a father, and when the duke dies, the aforesaid urchin becomes heir to a million dollars. There is one thing certain, and that is, the persons who read such papers and novels, can not or do not think of any thing else but them. They cannot think of the utter folly of reading such trash, or they would not read it.

I remember that about a year or two ago a certain Sunday School in this city had a number of books, with speckled covers, some histories of the ancients and some of prominent persons of modern times. These books laid in the library, sorted over and over every Sunday, but very few were taken away. Being history, they were "too dry," and the "specklies" (as they were called) laid there, read by nobody, although there is no doubt, if they had been read they would have proved highly beneficial to the readers. But no, the "specklies" were shunned, as if they were a pestilence instead of a store-house of knowledge and truth.

Various are the excuses given by different persons for reading novels. Ask one why he reads them and he will tell you "to

gain a knowledge of the best styles of writing;" this is a specious plea, and is often urged. But it is false. The individual who makes this his motive for reading several thousand pages of fiction is self-deceived. They create nothing but artificial interest, which gives them the preference, and there is scarcely a novel written in a style worthy of being employed in writing a veritable book. One of the silliest objects in the world is an individual melted to tears, while reading a novel, weeping over the phantasm which the author has made to flit before the mind. God never intended our feelings to be exercised thus. But suppose you could acquire the best style by reading novels, are you ignorant of the fact that the mind becomes assimilated to that which it habitually contemplates? After reading novels, the very objects which you ought to be familiar with have no attraction for you, because your natural relish has been perverted. Some read novels "to gain a knowledge of history, because they are founded on it." This is false. Examine carefully the historical part of any novel, and you will find in comparing it with veritable history, that the writer has only used facts to give an air of truth to his works, and in many cases, he has awfully distorted even these in order to adapt them. Some read them "to gain a knowledge of human nature." This is also wrong, for you cannot gain a knowledge of human nature, by reading them. Examine carefully any novel, and you will find that, with comparatively few exceptions, the characters with which you are so much delighted are merely phantoms. They exist only in the fertile brain of the author, and yet some persons read novels to gain a knowledge of human nature.

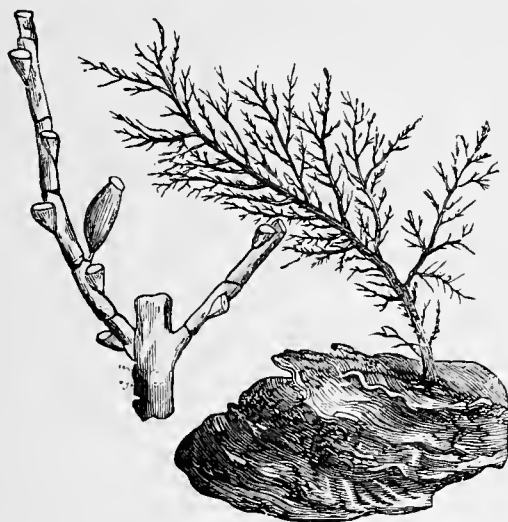
"You do wrong in reading novels, because you destroy your power of concentration of mind. It is a well known fact that novels require less mental exercise than any other kind of reading. A mind wholly absorbed in fiction becomes dwarfish and unfit for the actual duties of life. The reason is obviously because the imagination is exercised, and the reasoning faculties lie dormant. Feed the mind on fancies, and it will become nervous and enervated, but feed it on truth, and the result will be on the opposite side. Exercise your reasoning powers. Store your mind with truth, that alone is beautiful; and you will find that thought is productive; each effort better capacitates the mind for the next. You will make a geometrical progression. Whereas in novel reading your mind resembles the cup of Tantalus—an ever-flowing stream enters, but the water rises not."

LEARN TO SAY No.—Young man learn to say "No." When you are tempted, utter it with a will—"No." When fair hands offer you the wine-cup say it gently, yet with unwavering firmness—"No." A young companion invites you to the billiard-room, or the gaming-house. Do you think it would be well to go? "No." Well then, how will you answer him? "I—I—I think I won't go to-night." He will collar you and say, "Oh, come along now." If you add, with bated breath, "I was brought up not to go to such places," he will say, "Be your own man; I wouldn't always be tied to my mother's apron-string; come on;" and on you go like a dumb ox to the slaughter. A decided and emphatic "No," which would have made your tempter feel that your self-respect was touched by his proposal, would have sent him away to return on such an errand no more.

THE slander of some people is as great a recommendation as the praise of others.

CORAL.

Who would think that those tiny whitish-yellow, worm-like objects, which anyone who has been in tropical waters may have seen waving about under water, at a depth ranging between one fathom and thirty fathoms, clustered in myriads about a lump of white rock, were the contractors for the great works which, under the name of *coral*, form so prominent a feature on the face of the globe? For a long while it was supposed they were not so; it was even denied that they were animals at all. To the vegetable kingdom they were relegated, and remained its subjects till about the year 1720, when Peyssonnel, a physician at Marseilles, having given much time and study to the subject, announced that corallia were undoubtedly animals. At first he met with the reception every propounder of a new truth must look for—he was ridiculed; but he lived long enough to see his assertion confirmed and adopted by all the eminent men in the scientific world.



HERRINGBONE CORALLINE.

The corallia, though divided into several classes, have certain general characteristics in common. They are all polyps—that is, contractile animals, having an intestinal cavity—with distinct terminal mouth, surrounded by tentacles or radiating lobes. Most of them secrete a hard, calcareous substance, with which they build their habitation, or “polypary,” as it is called. This polypary has a different shape, according to the sort of animals working within it. Some polyparies are branched like boughs of trees, as the polypary of the Madrepores and Millipores; some are like bundles of tubes bound together, and are called from that circumstance, “organ coral;” others, as the “Isis hippuris,” which is found in the Indian Sea, consist of a number of calcareous bones connected by horny joints. The fan-shaped coral and the curious brain coral are well known. Blood coral, a red coral found only in the Mediterranean, and at some depth, is irregularly shaped, and is rarely of any considerable size though the price it fetches, on account of its rarity and beauty, is very great. Pink coral, also from the Mediterranean, is highly prized.

(To be Continued.)

WHAT relation is your uncle's brother, who is not your uncle? Your father.

Old America.

BY G. M. O.

THE AZTECS.

(Continued.)

THE Mexican calendar stone was found buried in the great square during the year 1790, and is now preserved in the Museum of Antiquities in the City of Mexico, along with the sacrificial stone. The calendar is eleven feet eight inches in diameter, and was carved from a mass of porous basalt. It was a fixture of the Aztec temple. The Aztec year, like ours, consisted of three hundred and sixty-five days; or rather, it was composed of eighteen months, of twenty days each, which would make only three hundred and sixty days; but, at the end of the last month, they added five days, which they called “Nemontemi,” or useless, because they did nothing in these days but receive and return visits. Nor did they add what is called the intercalary day every four years, as we do, but, at the expiration of every fifty second year added thirteen days. Their century consisted of fifty-two years, which was subdivided into four periods of thirteen years each. Two centuries—one hundred and four years—formed an age. The method adopted by the Aztecs to compute time was common to all the polished nations of Anahuca (Mexico), without any variation except in names and figures. The Chiapanese, a nation the most distant from the capital, instead of the names and figures of the rabbit, the cane, flint and house of the Aztecs, used the names of “Votan,” “Lambat,” “Been,” and “Chinax;” these were the names of illustrious men among their ancestors.

The religion of the Aztecs was most cruel and superstitious. Clavigero says if we compare the religion of the Mexicans with the mythology of the Greeks and Romans we shall find the latter the most superstitious and ridiculous, the former the most cruel. Those nations of Europe imputed to their gods the most atrocious crimes, and stained their worship with the most scandalous ceremonies. The Mexicans imagined their gods perfect, and however cruel they were in their worship there was nothing about it repugnant to decency.

The Aztecs had an imperfect idea of a supreme independent Being, whom they acknowledged, feared and adored. They represented him in no external form, because they believed him to be invisible, and named only by the common appellation “Teotl” (God). At times they applied to him certain epithets denoting his power, such as “Ipalmemoani”—he by whom we live; and “Tloque Nahuaque”—he who has all in himself. They also believed in an evil spirit, called the “rational owl,” and a place called “Mictlan,” or hell; here reigned a god called “Mictlantetli”—lord of hell. Among the many deities worshiped by the Mexicans there were thirteen principal or great gods. “Tezeatlipoca”—Shining Mirror—was the greatest after the invisible god. “Quetzalcoatl,” the god of air, was of a fair complexion, and was called the “fair god.” He was said to have once been high priest of Tula. He was worshiped by the nations of Mexico universally. Dr. Siguenza imagined this god was the apostle St. Thomas. The god most honored by the Aztecs was “Mexitli,” or “Huitzilopochtli,” the god of war; he was considered their chief protector. Of this god some said he was a pure spirit, others that he was born of woman without man's assistance.

It was this god they said conducted them for so many years in their pilgrimage and at length settled them where they afterwards built the great city of Mexico. It is from his name the word Mexico is derived. The Aztecs' gods were generally the same as those of the other nations of Anahuac, differing only in a greater or less celebrity in some of their rites. The god most celebrated in Mexico was "Mexitli;" in Cholula and Huexotzinco, "Quetzalcoatl;" among the Totonacas, "Centteotl;" among the Otomies, "Mixcoatl." The Tlascalans, although the constant enemies of the Mexicans, worshiped the same gods, and their most favored one was Mexitli, but under another name—"Camaxtle." The number of the images by which these deities were represented in the temples, streets, houses and groves, was infinite. They were made of stone, clay, wood, gold and other metals. The divinity of these gods was acknowledged by prayers, kneeling and prostrations, with vows, fasts and other austerities, with human sacrifices and offerings. They not only believed the soul of man, to be immortal, but that the same was the case with that of the brute. But "Quetzalcoatl"—Feathered Serpent, or Fair God—demands the most interest from us. They figured him tall and of a fair complexion, with long hair and beard. From a love of decency he always wore a long robe; he possessed the greatest industry; he was supposed to have had the most profound wisdom, which he displayed in the laws which he left to mankind; in fact, he is said to have been most rigid and exemplary in manners. Besides the decency and sweetness of his manners, he showed aversion to all kinds of cruelty, so much so that he could not bear to hear the very mention of war. To him they owed their knowledge of melting metals, the laws governing their religious rites, and by some to him is attributed the arrangement of the calendar. It was generally believed that he suddenly disappeared, but would in time return to the country and again, as their great high priest, govern the people. So firmly was this tradition impressed on the mind of Montezuma, and, in fact, upon the minds of the Aztecs generally, that when Cortez landed, the emperor summoned his council, consisting of the king of Tezeuco and other high dignitaries, and it was unanimously decided that he was the "fair god," returning to the country, as predicted, and this was one of the main causes of the easy subjugation of the emperor and his people.

The Aztecs had not only made a great proficiency in astronomy, but their political and military government, their social law and customs, their language, poetry, music, painting, sculpture, mosaic works and architectural knowledge were of an advanced order. Laying aside their inhuman sacrificial superstitions, their morality was above that of the fillbustering horde that subjugated them.

The Aztecs or Mexicans were themselves invaders, whose extended dominion was less than two hundred and fifty years old, although they had been much longer in the valley of Anahuac; in fact, but a few years previous to the landing of Cortez, they had completed this conquest. But they did not come from abroad; they belonged to the country, dwelling somewhere in the south in obscurity. By some writers it has been assumed that they came to Mexico from the north; but investigations have made it probable that they went from the south. Mr. Squire says: "The hypothesis of a migration from Nicaragua and Cuscutlan to Anahuac is altogether more consonant with probabilities and with tradition than that which derives the Mexicans from the north; and it is a significant fact that on the map of migrations, presented by Gemelli, the place of the origin of the Aztecs is designated by the sign of

water—"atl"—standing for Aztlan, a pyramidal temple with grades, and near these a palm tree. Humboldt and Baldwin also think this indicates a southern origin. According to the native histories, as reported by Clavigero, they began their migration about A. D. 1600. Another result of investigation is reached as follows. Says Mr. Baldwin: "The Mexicans stated that their calendar was reformed some time after leaving Aztlan, and that, in the year 1519, eight cycles of fifty-two years each, and thirteen years of a ninth cycle, had passed since the reform was made. This carries back the beginning of their migration beyond the year 1090 A. D. They grew to supremacy by conquest of the small states into which the country was divided, and learned from their more cultivated neighbors to reform their calendar."

(To be Continued.)

## THE ART OF COINING.

BY R. J. FILCE, KAYSVILLE.

FOR several centuries a system has obtained of circulating coins or money in exchange for articles of commerce. This circulating medium, when first introduced in England, was manufactured by what is known as hand power, a very slow process indeed compared with the improvements of to-day, the contrast between which is what I wish to show to the rising generation.

In the year 1650 an improvement was made in the manufacture of coins, at which time perfection was no doubt aimed at, and, in the minds of some, really reached. After these improvements were made it took the arduous labors of seven men and two boys one week to accomplish what can easily be performed by one youth at the present time, with the aid of powerful and ingenious machinery, in about eight hours. Again, so rapid has been the advancement in the art of coining of late years that what required the combined labors of twelve men and two boys to perform in 1850, by the most improved machinery then known, can now be accomplished with ease by one little boy, with the aid of more recent machinery, in about one-fourth of the time. In some instances modern inventions have superseded the use of men and boys altogether, which has been the case in many other manufactures as well.

Gold is a metal known by its color, of which there are three different shades or colors, according to the country in which it is found. These various shades are very apparent when placed side by side with each other. The gold obtained from Peru and Chili, in the west and south-west of South America, is, when pure, of a brownish color, that from California is of a pale yellow color; while that from Australia, or New Holland, is of a pale green, with the yellow predominating. Gold is also one of the heaviest metals (it was supposed to be the heaviest of all, but modern scientific discoveries have proved platinum to be of denser specific gravity), and its great scarcity, value, beauty and usefulness cause it to be held in high esteem by mankind. It is remarkable for its malleability, or tension; it is so very tenacious that one fourth part of an ounce weight of it is capable of being drawn out without breaking a distance of one English mile, 1,760 yards or 5,280 feet; and, the more it is hammered, rolled or drawn, the softer it becomes. To prepare it for public usefulness, that is, to give it hardness, or durability, it has to be "alloyed," that is, mixed up with inferior metals, the details of which would come under the head of "metallurgy." The different qualities

of alloyed gold are known by the number of "carats" or parts of fine gold it contains. Thus, fine gold contains twenty-four carats of the pure metal and no alloy. What is called "standard gold," such as coin and wedding rings are made of, contains twenty-two carats, or parts, fine, and two carats, or parts alloy; eighteen carat, such as good gold watch cases or chains are made of, contains six parts alloy; common gold jewelry is made up of nine or ten carat gold, hence, it contains fourteen or fifteen parts alloy. The various qualities of gold are decided by the application of certain tests such as aquafortis or nitric acid, this acid when placed on gold from fourteen to twenty-four carats fine, remaining unchanged in appearance, and looking like a spot of water on the gold; when applied to gold inferior to that it commences to turn red, and in time would eat its way through the surface of the metal; when applied to anything inferior to this, it will change to a green. The fine gold is conveyed from the bank to the mint and accurately weighed, even to a grain, and a strict account kept of the weight of gold received; it is then placed in crucibles made of the very finest plumbago (blacklead) for the purpose of being melted, which is done by subjecting it to a great heat in a furnace. To every twenty-two pounds of fine gold placed in the crucible, two pounds of inferior metal is added, this making it "standard" or twenty-two carat gold. After being well mixed up while in a molten state, it is poured out into cast iron moulds, which shape it into bars or ingots, about twenty-four inches long, by one and half inches wide, and one inch thick, weighing about twenty-five pounds each. They are then assayed or tested to see if the quality is right; after being carefully weighed each bar being numbered, the weight of each bar is marked thereon, and made to correspond with the weight and number in the books, when it is conveyed into a rolling mill.

The rolling process is performed with great skill, and is done to solidify, compress and equalize the thickness of the metal; the assayed bars of gold are run through heavy steel rollers, on which is placed thousands of tons pressure by means of large screws turned by immense levers. When the metal has been reduced from its original thickness to about three-eighths of an inch thick, which is done by passing it through the rollers about seven times, it becomes so hard and brittle that further pressure would cause a breaking up of the metal. This is done by first cutting it into convenient lengths, (for it has now become very long,) by placing it between the jaws of massive shears that could instantly cut in two a piece of solid metal the size of a horse's neck. It is then further annealed by placing it in seamless copper tubes, rendered air tight by means of loamy clay, and is now placed on an iron wagon and run into a long furnace capable of heating metal to a melting heat. The utmost care and attention is now absolutely necessary, as the least mistake would cause a great disaster; that is, it would cause the copper tubes and the gold inside of them to melt together. When sufficiently heated, it is taken out of the furnace and plunged into cold water. It is now soft and pliable, and is still further reduced by passing it through smaller rollers a sufficient number of times, until it becomes as thin as required. This last operation is not done without exercising the utmost patience, skill and care; for the excellence of the coin depends a great deal upon the skill of the metal-roller. So accurately can the weight of the "blank" be determined by the thickness of the metal, that it is now possible for an experienced man to tell to a small fraction of a grain what the weight of a blank would be when cut out of a strip of metal. This is determined by the use of gauges.

(To be Continued.)

## LEARN A TRADE.

I NEVER look at my old steel composing rule that I do not bless myself that, while my strength lasts, I am not at the mercy of the world. If my pen is not wanted I can go back to the type-case and be sure to find work; for I learned the printer's trade thoroughly—newspaper work, job work, book work, and press work. I am glad I have a good trade. It is a rock upon which the possessor can stand firmly. There is health and vigor for both mind and body in an honest trade. It is the strongest and surest part of the self-made man. Go from the academy to the printing office, or the artisan's bench, or, if you please, to the farm—for be sure true farming is a trade, and a grand one at that. Lay thus a sure foundation, and, after that, branch off into whatever profession you please.

You have heard, perhaps, of the clerk who had faithfully served Stephen Girard from boyhood to manhood. On the twenty-first anniversary of his birth-day he went to his master and told him his time was up, and he certainly expected important promotion in the merchant's service. But Girard said to him—

"Very well. Now go and learn a trade."

"What trade, sir?"

"Good barrels and butts must be in demand while you live. Go and learn the cooper trade; and when you have made a perfect barrel bring it to me."

The young man went away and learned the trade, and in time brought to his old master a splendid barrel of his own make. Girard examined it, and gave the maker two thousand dollars for it, and then said to him—

"Now, sir, I want you in my counting-room; but henceforth you will not be dependant upon the whim of Stephen Girard. Let what will come, you have a good trade always in reserve."

The young man saw the wisdom, and understood.

Years ago, when the middle-aged men of to-day were boys, Horrace Greeley wrote:

"It is a great source of consolation to us that when the public shall be tired of us as an editor, we can make a satisfactory livelihood at setting type or farming; so that while our strength lasts ten thousand blockheads, taking offense at some article they do not understand, could not drive us into the poor house."

## CONUNDRUMS.

WHAT gives a cold, cures a cold, and pays the doctor? A draught.

Why is the letter D an interloper? Because it in-judiciously stands between U and I.

What can't you name without breaking it? Silence.

Why is a fretful man like a hard baked loaf? Because he is crusty.

Why is a prudent man like a pin? Because his head prevents him going too far.

What is the the worst seat to hold one up? Conceit.

What goes against a farmer's grain? His reaping-machine.

What is the difference between a hill and a pill? One is hard to get up and the other is hard to get down.

What is that which, when thrown out, you may catch without hands? A hint.

What goes best only when tired? A wagon wheel.

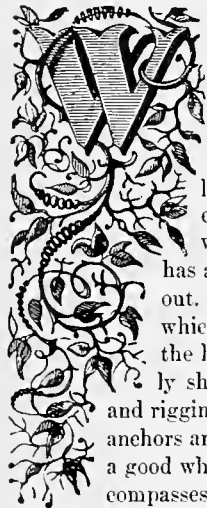
What sort of a drum is that which is best when it cannot be beaten? A conun-drum.

## The Juvenile Instructor.

GEORGE Q. CANNON, - - - - - EDITOR.

SATURDAY, MARCH 26, 1875.

### EDITORIAL THOUGHTS.



COULD any one who knows anything of the way ships are controled think it wise to send a ship to sea, to encounter the boisterous winds and the tempestuous ocean, without a rudder, sails or anchor? If a ship builder were to launch a ship and leave her to make a voyage in such a condition, he would be thought crazy. The wise ship owner is very careful when he has a vessel built to have her properly fitted out. He is careful to have all the timber of which she is built sound and strong, to have the hull well fastened, well calked and properly sheathed with copper; to have good masts and rigging and sails; to have her well supplied with anchors and cables; to have strong rudder chains and a good wheel to turn the rudder, and well adjusted compasses by which to steer during the light of day and the deep, sombre darkness of night. Besides all this, when the captain and officers go aboard they are well supplied with the necessary instruments to take observations of the heavens by day and by night, so as to be able to tell exactly what part of the ocean they are in and how far they are from and how near they are to land. When the ship is fully prepared to encounter the dangers of the ocean, she is sent forth on her voyage.

Children in entering upon the voyage of life should be as careful to start right and with the necessary equipment as the mariner of experience is in starting upon his ocean voyage. If they do not, the results may be most disastrous. Shipwreck and eternal loss may be the consequence. They should have a determined purpose. This propels them upon their voyage. Unless there is a wind to fill the sails of a vessel and push her along through the water, she lies listlessly and helplessly, tossed to and fro by the movement of the waves. The movement of the rudder has no effect upon her. But when she is under headway through the water, propelled by wind filling her sails, the slightest movement of the rudder is felt and she answers to it.

So with men and women. If they have a determined purpose, they are driven along. They do not lie still, listlessly and idly. Then if they have the Holy Spirit to guide them, it acts as a compass and a rudder. They feel its slightest impulse and should obey it. Certainly the Holy Spirit can be more felt by an industrious man or woman who has a purpose, than by an idle person who merely vegetates.

The Holy Spirit points out the best and nearest course to reach the desired destination. They who follow its guidance reach the haven of rest at the end of the voyage with the least danger and difficulty.

SPeaking of having a *purpose*, how pleasant and cheering it is to see boys and girls start out with one. Each say "I am a Latter-day Saint, and, with God's help, I shall continue to be such." But temptation presents itself. They are in com-

pany, and sit down to table. Tea and coffee are offered to all. They see those whom they respect take them. They are also pressed to partake. If they have a purpose, and are true to it, they decline. They firmly, but respectfully say, no. They remember what God has said about hot drinks. The boy becomes a young man. He falls in company with those who smoke or chew tobacco. He is offered a cigar. If he feels ashamed because he cannot smoke, and thinks his companions will look upon him as unmanly or inferior, he is in danger. He probably will try to learn to use the abominable stuff. But if he remembers his purpose—that he is a Latter-day Saint, whose God has plainly said that tobacco is not good for man—he will firmly decline to use it, and convey to them that he thinks himself better off without it.

Again, he may be thrown into company with those who drink, and who may press him to join with them. It may seem ungracious for him to refuse; but if he should be true to his purpose, he will do so. He will remember that his God has said, that strong drinks are for the washing of the body *on the outside, not on the inside*.

So, if he should be thrown into the company of the profane, he will not copy but he will shun, their example. He will remember the commandment: "Thou shalt not take the name of the Lord thy God in vain; for the Lord will not hold him guiltless who taketh his name in vain."

Thus he will remember his purpose and be a Latter-day Saint in all places and among all people. Will he lose any influence by taking this course? Not the least.

Men admire integrity and firmness and sincerity. A man who smokes and chews tobacco knows they are filthy habits. He admires a man who has sufficient courage and strength to refuse to adopt them even though they are popular.

The man who drinks, secretly admires the man who refuses to drink, and respects him the more for his refusal. So, also, with the profane man; he knows the habit is a bad one, and he holds a man in greater honor in his secret feelings who abstains from profanity than he does those who are like himself.

Latter-day Saints may drink tea and coffee, and they may try and persuade others to drink them; but they respect them more when they refuse than they would if they yielded to their offers.

There is a feeling of admiration in the breast of every intelligent being who is not entirely corrupted, for virtue and godliness, and they cannot but respect and secretly honor those who are true to principle.

CULTIVATE liberality in children. Do not fear the effect of teaching them to be kind and liberal. We have known parents who mourned over their children because they were so free in giving away whatever they had. They seemed to think their children would always be poor because they were not selfish. This is a great mistake. The prophet Isaiah says: "But the liberal deviseth liberal things, and by liberal things shall he stand." God loveth a liberal giver. Men also admire liberality, and are always disposed to deal more fairly and kindly with one who has this character than with a stingy or selfish man.

Contact with the world is apt to harden men and make them more selfish. Therefore, if children start out in the beginning of life with a disposition of this kind, they are apt to become grasping and unfeeling when they reach mature years, and to think of no one's interest but their own. But if too free and generous in childhood, contact with the world has a modifying

effect, and they very soon learn to have the necessary care for self.

Selfishness is the bane of society. It is one of the great obstacles to be conquered by the gospel. We therefore say: Repress selfish inclinations in children and encourage them to be liberal. It is a most lovable and attractive trait in children to be generous and free to give. And what is more delightful then to see a child thinking more of somebody else's pleasure than its own?

## Correspondence.

BOUNTIFUL, DAVIS CO.,

March 17, 1875.

*Editor Juvenile Instructor:*

DEAR BROTHER:—Sunday last, the 14th inst., was an interesting time to the people of North Canyon ward, it being the occasion of the examination of the Sabbath Schools of this place.

After singing by the Sunday School Choir, and prayer by the chaplain, pieces were spoken by the children, which consisted of Questions and Answers from the Bible and Book of Mormon, selections from the JUVENILE INSTRUCTOR, and other publications of the Church. In justice to all I must say they acquitted themselves admirably, showing with what diligence they had employed their own minds, and the untiring energy and perseverance of their teachers.

Permit me to mention a few names of those who were most excellent:

Master Frank Green—"Happier days to come." William Ashby—"Give the little boys a chance." Byron Eldridge—"Don't forget the old folks." Miss Eliza Barnett—"New year's eve, or the gambler's wife." Harriet E. Jones—"Little drops of water." Flora Burgess—"Look aloft." Nellie Muir—"Little women." Laura Ellis and Olivia Johnson—a dialogue between a stranger and a Mormon lady. Sister Rebecca Brown's class—"Lessons for little learners." Mary Wolstenholme's class—"Questions and Answers from the Bible." Sarah Hogan's class (young ladies)—"Questions and Answers from the Book of Mormon." Israel Call's class—"Questions and Answers from the Bible."

The singing by the City Bountiful and South District choirs was very good. Brother James Waite has been very diligent and persevering in teaching the children music, for which he is well qualified. Elder N. T. Porter, County Superintendent, addressed the meeting, urging upon teachers, superintendents and scholars the importance of increasing our subscriptions for the JUVENILE INSTRUCTOR, etc.

Bishop Anson Call, whose interest has always been with the Sabbath School, delivered an address suitable to the occasion. He was followed in some excellent remarks by Counsellor John Telford.

Elder Henry Rampton, the ward superintendent, presided on this occasion. He is well respected in the position he holds, ever manifesting a kind, fatherly, and charitable disposition to all, so that his presence in the Sabbath School is at all times felt for good.

Respectfully,

CHARLES R. JONES.

## A SCOTTISH TRADITION-ARY STORY

GRIZEL COCHRANE.

THE age which this noble woman adorned with her life and heroic actions, was that gloomy one extending between the Restoration and Revolution (from 1660 to 1688), when the Scottish nation suffered under a cruel oppression, on account

of their conscientious scruples respecting the existing forms of church and state. Three insurrections, more bold than wise, marked the impatience of the Scotch under this bloody rule; but it was with the last solely that Grizel Cochrane was connected.

Sir John Cochrane of Ochiltree, the father of our heroine, was the second son of the first Earl of Dundonald, and the ancestor of the present line of that noble and ingenious family. He was a distinguished friend of Sidney, Russell, and other illustrious men, who signalled themselves in England by their opposition to the court: and he had so long endeavoured in vain to procure some improvement in the national affairs, that he at length began to despair of his country altogether, and formed the design of emigrating to America. Having gone to London in 1683, with a view to a colonising expedition to South Carolina, he became involved in the deliberations of the Whig party, which at that time tended towards a general insurrection in England and Scotland, for the purpose of forcing an alteration of the royal councils, and the exclusion of the Duke of York from the throne. In furtherance of this plan, Sir John pledged himself to assist the Earl of Argyll in raising the malcontents in Scotland. This earl was, if not the acknowledged head of the party in that kingdom, at least the man of highest rank who espoused its interests.

By the treachery of some of the subordinate agents, this design was detected prematurely; and while some were unfortunately taken and executed, among whom were Sidney and Lord Russell, the rest fled from the kingdom. Of the latter number were the Earl of Argyll, Sir John Cochrane, and Sir Patrick Hume of Polwarth—the last a patriot rivalling Cochrane in talent and purity of motives, and also, like him, destined to experience the devotedness of a daughter's love. The fugitives found safety in Holland, where they remained in peace till the death of Charles II., in February 1685, when the Duke of York, the object, politically, of their greatest detestation, became king. It was then determined to invade Scotland with a small force, to embody the Highland adherents of Argyll with the west-country Presbyterians, and, marching into England, to raise the people as they moved along, and not rest till they had produced the desired melioration of the state. The expedition sailed in May; but the government was enabled to take such precautions as, from the very first, proved a complete frustration to their designs. Argyll lingered timidly in his own country, and finally, against the advice of Cochrane and Hume, who were his chief officers, made some unfortunate movements, which ended in the entire dissolution of his army, and his own capture and death. While this well-meaning but weak nobleman committed himself to a low disguise, in the vain hope of effecting his escape, Sir John Cochrane and Sir Patrick Hume headed a body of 200 men, formed out of the relics of the army, and bravely resolved, even with that small force, to attempt the accomplishment of their original intention—namely a march into England. They accordingly crossed the Clyde into Renfrewshire, where they calculated on obtaining some reinforcement. The boats on this occasion being insufficient to transport the whole at once, the first party, headed by the two patriots, was obliged to contend, on the opposite bank of the river, with a large squadron of militia, while the boats returned for the remainder; after which the united force caused their opponents to retreat. The militia returned, however, in greater force, and renewed the assault at a place called Muirdykes, in the parish of Lochwinnoch.

They were now commanded by Lord Ross and Captain Clellan, and amounted to two troops, while Sir John Coch-

raue's men had decreased to seventy in number. In this predicament, they were called on by the royal troops to lay down their arms, and surrender themselves prisoners. Preferring the risk of death on the field to the tender mercies of a vindictive foe, they rejected the terms with disdain, and entering a sheepfold, used its frail sod-walls as a defense against the furious attack of the enemy, whom, after a keen conflict, in which every man fought hand to hand with his opponents, they at length succeeded in beating off, with the loss of their captain and some other men, while Lord Ross was wounded. Cochrane, however, soon after learned that the enemy was returning with a great reinforcement, and fearing that he could not much longer defend himself on the field, retired with his troops to a neighboring wilderness or morass, where he dismissed them, with the request that each man would provide the best way he could for his own safety. For himself, having received two severe contusions in his own body during the engagement, and being worn out with fatigue, he sought refuge in the house of his uncle, Mr. Gavin Cochrane of Craigmuir, who lived at no great distance from the place of encounter. This gentleman, however, as it unfortunately happened, had married a sister of the Captain Clellan killed in the late battle, and filled with revenge for the death of her brother, this lady secretly informed against her guest, who was immediately seized, and removed to Edinburg, where, after being paraded through the streets, bound and bareheaded, and conducted by the common executioner, he was lodged in the Tolbooth, on the 3rd of July 1685, there to await his trial as a traitor. The day of trial came, and he was condemned to death, in spite of the most strenuous exertions of his aged father, the Earl of Dundonald, who, having received his title from the hands of Charles II., had, from motives of honor, never conspired against him.

Where is the tongue that can express all the secret and varied anguish that penetrates the yearning heart, when about to leave for ever the warm precincts of mortality, to quit the loving charities of life, and to have all the cords which bound it to existence suddenly torn asunder? Natural strength of mind may suffice to conceal much of this mortal conflict, or even to hide it altogether from the eye of the careless observer, but still it is at work within, and grapples in deadly struggle with the spirit.

Such was the state of Sir John Cochrane's mind on the night of his condemnation, when left once more to the gloomy solitude of his prison. It was not the parting stroke of death he feared, however sharp. He was a father, loving and beloved; and the thoughts of the sorrow his children were doomed to suffer on his account, wrung his heart; and burning tears, which his own fate could not have called forth, were shed for them. No friend or relative had been permitted to see him from the time of his apprehension; but it was now signified to him that any of his family he desired to communicate with might be allowed to visit him. Anxious, however, to deprive enemies of an opportunity of an accusation against his sons, he immediately conveyed to them his earnest entreaties, and indeed commands, that they should refrain from availing themselves of this leave till the night of his execution. This was a sacrifice which it required his utmost fortitude to make; and it had left him to a sense of the most desolate loneliness, inasmuch that, when, late in the evening, he heard his prison-door unlocked, he lifted not his eyes towards it, imagining that the person who entered could only be the jailer, who was particularly repulsive in his countenance and manner. What, then, was his surprise and momentary

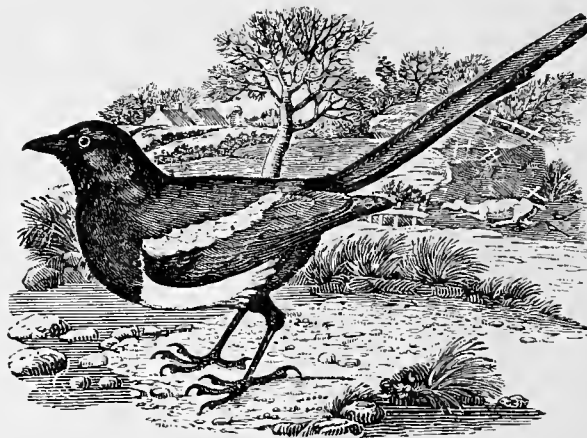
delight when he beheld before him his only daughter, and felt her arms entwining his neck! Yet, when he looked on her face, and saw the expression it bore of mute despairing agony, more fearful than the most frantic manifestations of misery, and marked her pale cheeks, which no longer bloomed with the tints of health and happiness, and felt the cold dampness of her brow, he thought himself wrong for having given way for an instant to the joy her presence had created, and every other sensation fled before his fear of what might be the consequence to her of this interview.

(To be Continued.)

## BIRDS.

### THE MAGPIE.

THE Magpie is found in very many parts of the world, always keeping to well-wooded districts, as if distrusting its power of flight in the open country; for the larger hawks are prone to fly at the Magpie, which has but little chance of escape upon the plain, but can always evade his foe among the hedgerows and plantations, by slipping among the branches and dodging through the foliage. Even a trained falcon fails



THE MAGPIE.

to catch a Magpie when it has once reached such an asylum, and the falconer is forced to drive it from its refuge before the hawk can secure its prey. In some parts of England, Magpie-hawking is a favorite amusement, for the Magpie is fully as cunning as a fox, and in spite of all the array of beaters, hounds, and horsemen, not unfrequently baffles its pursuers, and makes its escape in safety. Doubtless many of our young readers are acquainted with the appearance of this bird, as it is to be found in different parts of this Territory. By careful training it may be taught to pronounce words, and sometimes even sentences.

### THE SWIFT.

This bird is a native of many parts of America, being found in Louisiana, Carolina, and even in Pennsylvania. It is chiefly remarkable for the ingenuity which it exhibits in the construction of its singular nest. Choosing some convenient locality, such as a rocky crevice, or the unused chimney of a house, the bird commences its labors by putting together a slight platform of dry twigs, which it cements together with certain vegetable gums. So large is this platform that it sometimes causes considerable inconvenience to the inhabitants of the house where the swallow has taken up its residence, as

it completely stops up the orifice of the chimney. Upon this platform is formed a kind of cradle-nest, also composed of small twigs, which are woven into a kind of rude basket and also cemented together.

### THE WOODPECKER.

As is well known, the name of Woodpecker is given to these birds from their habit of pecking among the decaying wood of trees in order to feed upon the insects that are found within. They also chip away the wood for the purpose of making the holes or tunnels wherein their eggs are deposited. In order to enable them to perform these duties, the structure of the Woodpecker is very curiously modified. The feet are made extremely powerful, and the claws are strong and sharply hooked, so that the bird can retain a firm hold of the tree to which it is clinging, while it works away at the bark or wood with its bill. The tongue is furnished at the tip with a long, horny appendage, and covered with barbs and sharply pointed at the extremity, so that the bird is enabled to project this instrument to a considerable distance from the bill, transfix an insect, and draw it into the mouth. Those insects that are too small to be thus treated are captured by means of a glutinous liquid poured upon the tongue from certain glands within the mouth, and which cause the little insects to adhere to the



THE SWIFT.



THE WOODPECKER.

weapon suddenly projected among them. This whole arrangement is clearly analogous to the tongue of the ant-eater. The Woodpecker is also a native of this Territory, and the peculiar sound produced by its pecking may be heard in almost any of our timbered canyons.

(To be Continued.)

### SUCCESS IN LIFE.

BENJAMIN FRANKLIN attributed his success as a public man, not to his talents or his powers of speaking—for these were moderate—but to his known integrity of character. "Hence it was," he says, "that I had so much weight with my fellow citizens. I was but a bad speaker, never eloquent, subject to much hesitation in my choice of words, hardly correct in language, and yet I generally carried my point." Character creates confidence in men of high station as well as in humble life. It was said of the first Emperor Alexander of Russia, that his personal character was equivalent to a constitution. During the wars of the Fronde, Montaigne was the only man among the French gentry who kept his castle gates unbarred; and it was said of him, that his personal character was worth more to him than a regiment of horse. That character is power, is true in a much higher sense than that knowledge is power. Mind without heart, intelligence without conduct, cleverness without goodness, are powers in their way, but they may be powers only for mischief. We may be instructed or amused by them; but it is sometimes as difficult

to admire them as it would be to admire the dexterity of a pickpocket, or the horsemanship of a highwayman. Truthfulness, integrity and goodness—qualities that hang not on any man's breath—form the essence of manly character, or, as one of our old writers has it, "that inbred loyalty unto virtue which can serve her without a livery." When Stephen of Colonna fell into the hands of his base assailants, and they asked him, in derision, "Where is now your fortress?" "Here," was his bold reply, placing his hand upon his heart. It is in misfortune that the character of the upright man shines forth with the greatest lustre; and when all else fails, he takes stand upon his integrity and upon his courage.

### A SAGACIOUS DOG.

At one of the Newfoundland fisheries, a boat and crew trying to enter a small harbor found themselves outside a long line of breakers, in great peril. The wind and weather had changed since the boat had gone out in the morning, and her getting back safe seemed pretty doubtful. The people on shore saw her danger, but could not help her. Every moment increased the danger, and anxious friends ran to and fro. Among the crowd was a large dog, which seemed fully alive



to the peril of the boat and the anxiety of those on shore. He watched the boat, surveyed the breakers, and appeared to think as earnestly as anybody, *What could be done?*

At last he boldly plunged into the angry waters, and swam to the boat. The crew thought he wanted to join them, and tried to take him aboard. No; he would not go within their reach, but swam around, diving his head and sniffing, as if in search of something.

What was he *up to*? What did the creature mean? What did he want?

"Give him the end of the rope," cried one of the sailors, divining what was in the poor dog's brain; "that's what he wants."

A rope was thrown out; the dog seized the end in an instant, turned round, and made straight for the shore, where, not long after—thanks to the intelligence and sagacity of Tiger—the boat and crew were landed safe and sound.

Be kind to the doggies. Many a heroic deed and faithful service have they done for man.

WE have employments assigned to us for every circumstance in life. When we are alone, we have our thoughts to watch; when in the family, our tempers; and when in company, our tongues.

## Questions and Answers

### ON THE BIBLE.

#### BOOK OF RUTH.

##### LESSON LXXXIV.

- Q.—What did they do?  
 A.—“They lifted up their voices and wept.”  
 Q.—What reply did they make?  
 A.—“Surely we will return with thee unto thy people.”  
 Q.—When Naomi further entreated them, which of the daughters-in-law returned to her people?  
 A.—Orpah.  
 Q.—What did Ruth say?  
 A.—“Intreat me not to leave thee, or to return from following after thee: for whither thou goest, I will go; and where thou lodgest, I will lodge: thy people shall be my people and thy God my God.”  
 Q.—What else did she say?  
 A.—“Where thou diest, will I die, and there will I be buried: the Lord do so to me, and more also, if ought but death part thee and me.”  
 Q.—What did Naomi do when Ruth had said these things?  
 A.—“When she saw that she was steadfast minded to go with her, then she left speaking unto her.”  
 Q.—Where did they then go?  
 A.—To Bethlehem.  
 Q.—What came to pass when they arrived there?  
 A.—“All the city was moved about them, and they said, is this Naomi?”  
 Q.—What answer did she make?  
 A.—“Call me not Naomi, call me Mara: for the Almighty hath dealt very bitterly with me.”  
 Q.—What season of the year did they arrive in Bethlehem?  
 A.—“In the beginning of barley harvest.”  
 Q.—What was the name of the kinsman of Naomi’s husband?  
 A.—Boaz.  
 Q.—How is he described?  
 A.—As “a mighty man of wealth.”  
 Q.—What did Ruth the Moabitess say unto Naomi?  
 A.—“Let me now go to the field, and glean ears of corn after him in whose sight I shall find grace.”  
 Q.—What did Naomi say?  
 A.—“Go my daughter.”  
 Q.—When Boaz came to the field what did he say to the reapers?  
 A.—“The Lord be with you.”  
 Q.—What answer did they make?  
 A.—“The Lord bless thee.”  
 Q.—When Boaz learned who it was gleaning in the field what did he say?  
 A.—He told her to stay with his maidens and glean in the same field.  
 Q.—What did Ruth say in reply to his kindness?  
 A.—“Why have I found grace in thine eyes, that thou shouldest take knowledge of me, seeing I am a stranger?”  
 Q.—What answer did Boaz make?  
 A.—“It hath fully been shewed me, all that thou hast done unto thy mother-in-law since the death of thine husband: and how thou hast left thy father and thy mother, and the land of thy nativity, and art come unto a people which thou knewest not heretofore.”  
 Q.—What else did he say?  
 A.—“The Lord recompence thy work, and a full reward be given thee of the Lord God of Israel under whose wings thou art come to trust.”  
 Q.—What did Naomi say when she learned from Ruth the sayings of Boaz?  
 A.—“It is good my daughter, that thou go out with his maidens, that they meet thee not in any other field.”

## Questions and Answers

### ON THE BOOK OF MORMON.

#### REIGN OF THE JUDGES.

##### LESSON LXXXIV.

- Q.—How did Zerahemna feel?  
 A.—He was very angry, and excited the remaining Lamanites to battle.  
 Q.—What did the Nephites then do?  
 A.—They began to slay the Lamanites in great number.  
 Q.—When Zerahemna saw the great slaughter of his people, what did he do?  
 A.—He called to Moroni, saying he would agree to keep peaceful.  
 Q.—What did Moroni do?  
 A.—He ordered the slaughter to be stopped.  
 Q.—What happened to as many as would thus agree?  
 A.—They were allowed to depart in freedom.  
 Q.—What privilege did Moroni allow the Lamanites who agreed to give up their swords and enter into a covenant of peace?  
 A.—He allowed them to depart unharmed.  
 Q.—How did the remainder of the Lamanites act?  
 A.—Being stirred up by Zerahemna, they fought with great valor.  
 Q.—After the battle had raged for some time and Zerahemna saw his people being destroyed, what did he do?  
 A.—He called upon Moroni to cease the slaughter and he would covenant to remain peaceable.  
 Q.—After Moroni caused the work of destruction to be stopped did the Lamanites agree to his conditions?  
 A.—Yes, and they were allowed to depart.  
 Q.—What was done with the great number of dead bodies?  
 A.—They were thrown into the river Sidon.  
 Q.—In what year was this war?  
 A.—In the eighteenth year of the reign of the Judges.  
 Q.—How did the Nephites feel at the termination of this war?  
 A.—They were filled with joy and gave thanks to God.  
 Q.—In the next year what did Alma say, being filled with the spirit of prophecy at that time?  
 A.—He, speaking to his son Helaman, said that in four hundred years after the coming of Christ the Nephites should begin to show signs of unbelief.  
 Q.—What would be the result of this?  
 A.—The people of Nephi would become extinct, and the Lamanites would have the mastery.  
 Q.—After saying this what did Alma do?  
 A.—He blessed his sons, and blessed the earth for the sake of the righteous.  
 Q.—When he had also blessed the church and its faithful members what did he do?  
 A.—He left the land of Zarahemla.  
 Q.—Where was he supposed to be going?  
 A.—To the land of Melek.  
 Q.—What can you tell of his history after this?  
 A.—He never was heard of afterwards.  
 Q.—What was believed about his departure?  
 A.—It was thought that he was taken up by the spirit or buried by the hand of the Lord.  
 Q.—What great and good man, mentioned in the Bible, was taken in this way?  
 A.—Moses.  
 Q.—In this same year what did the sons of Alma do?  
 A.—They went forth preaching, to establish the church throughout the land.  
 Q.—What kind of a spirit was manifested by some of the members of the church?  
 A.—A spirit of pride, on account of their riches.

## HOME MANUFACTURES.

## SILVER.

BY BETH.

ONE of the most recent manufactories established here is that of the "Germania Works," the object of which is to separate from the impure bullion the precious metals and impurities it contains. The process by which this is done is so interesting and instructive that it will be briefly described from the *Mining Gazette* of 1874.

"About twenty-three tons of the base bullion, as received from the different smelting works is put into one of the largest pots, which are five in number, two of them having a capacity of twenty-five tons each. A sharp heat is kept up until the impure lead is thoroughly melted, and is sufficiently hot to melt the zinc which is the medium of separation. Zinc is employed for the separation of gold, silver and copper from lead, owing to its possessing a greater chemical affinity for these metals than that of lead.

"As soon as the metal has attained the requisite heat, from a half to one per cent. of zinc is added to the molten mass, which is well stirred by two men for half an hour, and then allowed to remain still for three hours.

"At the expiration of this time the scum is skimmed off and transferred to the pot next in advance. The whole operation, from the commencement to this point, occupies about four hours." A second addition of zinc is afterwards made to the No. 1 pot, which floats up with the remainder of the silver.

The dross or scum in the second pot is then melted, strained and cooled, and the skimmings are transferred to the third pot.

"A similar process is performed in pot No. 3, the dross, being skimmed off and transferred to a receptacle called the 'safe,' and the separated alloy of lead and zinc carried back. The remainder of the zinc having been added back to pot No. 1, it is again stirred and skimmed, the skimmings being put aside for a further operation.

"There is every convenience for running off the contents of the various pots into suitable furnaces to be further operated on. The furnace having been raised to the requisite temperature, the lead pot is tapped and the metal is allowed to flow into the furnace. The heat is then kept up and a portion of the zinc and antimony is oxydized and escapes in the form of fumes, while the remainder forms a scum which rises to the surface and covers the bath of lead. The lead is well rabbled from time to time with iron rakes, in order to expose a fresh surface to the air, and this is continued until the lead shows, by samples taken from the furnace, that it is pure and ready for tapping."

This is a most important article for use in the arts and manufactures, chemically pure lead being used for making white lead, red lead, etc. The lead is put into moulds that are on wheels that can be run under the melting pots. The bars of lead weigh about one hundred and forty pounds each and contain on an average not more than half a pennyweight of silver to the ton.

"The dross obtained from the skimmings of No. 1 pot is transferred to a flat-bedded calcining or roasting furnace, of which there are two in the main building, one for treating the pot skimmings, the other for the skimmings from the reverberatory furnace. It is here thoroughly roasted at a temperature insufficient to soften it, so as to get rid of any remaining zinc or antimony, and when sufficiently roasted is

then put into the flowing furnace, where the lead is separated from the iron and other matters which form a slag that is worthless. The lead is tapped and returned to No. 1 pot with a fresh charge of bullion, when the same routine is again gone through."

The most important process is that of treating the rich alloy from pot No. 3, which is taken from the "safe" to the shaft furnace, where it is mixed with iron ore, and lead slag in proper proportions.

"After a good heat has been raised in the furnace the charging is commenced: the coke is first thrown in and spread evenly over the surface. The rich alloy is then charged, being all fed against the front of the furnace. The iron ore and lead slag are then thrown in and mixed together, and spread evenly over the furnace. The heat is maintained so low that the furnace at the feed door is perfectly black and quite cool; the only flame visible being a small reducing flame running up the inside of the front of the furnace, the charge gradually sinks and meets the sudden incline, from whence the alloy passes down from the zone of fusion, in the centre of the furnace, without touching the walls, and is not melted until when within a few inches of the tuyeres. By this process the copper is obtained as matte, and the gold, silver and lead, in the form of a highly enriched lead. This rich alloy is tapped off about once every hour and a quarter, and the slag about every five minutes."

This rich alloy is then taken to the cupelling furnace which is at this establishment called the "test." It is heated with lead in a somewhat similar way to the ordinary method, lead being added until the impurities are entirely removed.

The "test" consists of an elliptical frame of wrought iron, filled in with bone ash well beaten, and hollowed out in the requisite shape. At the back of the furnace are two holes, one where the blast pipe enters, and the other for introducing the rich bar into the test. The test, which is placed with the long axis toward the blast, is left a little thicker at the opposite end, where the litharge flows over. When the test has been raised to a good heat, a sufficient quantity of the rich lead is introduced, the whole speedily melts, and the blast is now turned on. The oxygen of the air composing the blast oxydizes the lead into litharge, and this takes up all foreign metals. A proportion of the litharge is absorbed by the test but much the larger quantity flows over the end of the test furthest from the blast, and is received by iron pots mounted on wheels, which are removed as fast as filled. The rich lead is continually added until all has been oxydized, and the silver is now pure, containing only the gold in the bullion.

The process of cupellation is here carried on in a scale of great magnitude, and the attendant phenomena are correspondingly grand. The "brightening"\* of a mass of molten silver, such as is handled here, is exceedingly beautiful; on a small scale as in assaying, this has been described in these columns.

The silver is finally run into ingots and assayed, after which it is stamped with the degree of fineness, the gold not being separated generally at these works.

Mr. Henry Sieger, the superintendent of these works, presented a complete set of specimens of all the furnace products to President Brigham Young, among which is a silver brick marked 998.50 fine, all of which interesting specimens are deposited in the Deseret Museum.

\*The "brightening" is the appearance presented by the assay at the instant of complete purification from the oxides of the baser metals, when the surface shines like a mirror.

## SUNDAY LESSONS. FOR LITTLE LEARNERS.

ON THE HISTORY OF JOSEPH SMITH, THE PROPHET.—LESSON VI.

- Q.—What effect did it have upon him?  
 A.—He could not speak, and thought he was going to be destroyed.  
 Q.—What power was it?  
 A.—It was the power of the evil one.  
 Q.—Did it prevent him from praying?  
 A.—No, he prayed all the more in his heart.  
 Q.—What did he ask the Lord for?  
 A.—To deliver him from his enemy.  
 Q.—Did the Lord answer his prayer?  
 A.—Yes.  
 Q.—In what way?  
 A.—A great light appeared over his head.  
 Q.—Did the light frighten him?  
 A.—No.  
 Q.—What effect did the light have?  
 A.—It made him feel happy and caused the enemy to leave him.  
 Q.—Was he surrounded with the light?  
 A.—Yes, entirely.  
 Q.—How bright was the light?  
 A.—It was much brighter than the sun.  
 Q.—Did any body appear to him in the great light?  
 A.—Yes, two persons.  
 Q.—Did either of them speak to him?  
 A.—Yes, one of them called him by his name, Joseph.

**BREVITY.**—Talk to the point, and stop when you have reached it. The faculty some possess of making one idea cover a quire of paper, is not good for much. Be comprehensive in all you say or write. To fill a volume upon nothing is a credit to nobody; though Lord Chesterfield wrote a very clever poem upon nothing. There are men who get one idea into their heads, and but one, and they make the most of it. You can see it, and almost feel it, when in their presence. On all occasions it is produced, till it is worn as thin as charity. They remind one of a twenty-four pounder discharged at a humming-bird. You hear a tremendous noise, see a volume of smoke, but you look in vain for the effects. The bird is scattered to atoms. Just so with the idea. It is enveloped in a cloud, and lost amid the rumblings of words and flourishes. Short letters, sermons, speeches, and paragraphs, are favorites with us. Commend us to the young man who wrote to his father—"Dear sir, I am going to be married;" and also to the old gentleman who replied—"Dear son, go ahead." Such are the men for action. They do more than they say. The half is not told in their cases. They are worth their weight in gold for every purpose in life. Reader, be short; and we will be short with the advice.

**GROWING MUSHROOMS NEAR PARIS.**—Sixty or seventy feet under ground, just outside the fortifications on the south side of Paris, are old quarry mines, called the caves of Montronge. In some parts of the mines quarrymen are still at work, and in one part mushrooms are grown in six or seven miles of beds. The soil is merely little heaps of the siftings of the gypsum mixed with stable manure. The place is warm and dry, and secure from cold. These caves supply Paris, England and other countries with mushrooms, large quantities of preserved ones being exported. One house sends to England 14,000 boxes a year.

In 1867 another large mushroom cave near Paris contained over twenty-one miles of mushroom beds, and last year there were in another cave near by sixteen miles of these edible fungi.

Mushrooms require moisture, but not too much of it. The caves in which they grow at Paris are dry, and barrels of water have to be provided to water them. Most English mines are wet under foot and would not do for growing mushrooms, the chalk mines being almost the only ones suitable in this respect. It would be interesting to visit the caves near Paris, and see these old plants growing in their little beds.

## "BOYS WANTED."

Boys of spirit, boys of will,  
 Boys of muscle, brain and power,  
 Fit to cope with anything—  
 These are wanted every hour.  
 Not the weak and whining drones,  
 That all troubles magnify—  
 Not the watchword of "I can't,"  
 But the nobler one, "I'll try."  
 Do what'er you have to do  
 With a true and earnest zeal.  
 Bend your sinews to the task—  
 "Put your shoulder to the wheel."  
 Though your duty may be hard,  
 Look not on it as an ill;  
 If it be an honest task,  
 Do it with an honest will.  
 At the anvil, on the farm,  
 Wheresoever you may be—  
 From your future efforts, boys,  
 Comes a nation's destiny.

## ENIGMA.

BY T. C. GRIGGS.

I AM composed of 38 letters:

My 34, 36, 7, 38, 4, 31, 11, 35, 22, 14 and 17, is what we should all seek for;

My 21, 1, 5, 12 and 33, is a color;

My 23, 3, 18, 27, 10, 11, 2, 20 and 32, is the name of an ancient religious sect;

My 19, 29, 6, 24, 30, 16, 11, 8, 37, and 9, is what President Young is, and has been to this people;

My 15, 25, 26, 18 and 10, is a bird;

My 30, 13 and 28, is a tree;

And my whole is one of the proverbs of Solomon.

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